REMARKS

By the above amendment, claims 1, 2, 5, 6 and 8 have been canceled without prejudice or disclaimer of the subject matter thereof with new claims 12 - 14 being presented and the remaining dependent claims being amended in a manner which is considered to overcome the rejection under 35 USC 112, second paragraph, and to properly depend from the newly submitted claims.

As to the rejection of claims 1 - 11 under 35 USC 112, second paragraph, such rejection is considered to be overcome by the cancellation and amendment of the claims as presented herein. Accordingly, applicants submit that all claims present in this application should now be considered to be in compliance with 35 USC 112, second paragraph.

With respect to the Examiner's contentions concerning claims 3 - 7 as failing to provide for the use of a method, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intended to encompass. A claim is indefinite where it merely recites a use without any active positive steps and the rejection of claims 3 - 7 under 35 USC 101, such rejections are traversed insofar as they are applicable to the present claims. In this regard, it is noted that new independent claim 12 clearly sets forth method steps and the dependent method claims depend directly or indirectly from new claim 12. Applicants note that similar features are recited in new apparatus claim 14 from which the dependent apparatus claims depend directly or indirectly. Thus, applicants submit that all claims present in this application should now be considered to be in compliance with 35 USC 112, and 35 USC 101.

The rejection of claims 1 - 11 under 35 USC 102(a) as being clearly anticipated by Yui et al (6,483,120) or Muraki et al (6,515,409) and the rejection of

claims 1 - 11 under 35 USC 102(e) as being anticipated by Okunuki (6,787,784), such rejections are traversed insofar as they are applicable to the present claims and reconsideration and withdrawal of the rejections are respectfully requested.

As to the requirements to support a rejection under 35 USC 102, reference is made to the decision of In re Robertson, 49 USPQ 2d 1949 (Fed. Cir. 1999), wherein the court pointed out that anticipation under 35 U.S.C. §102 requires that each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference. As noted by the court, if the prior art reference does not expressly set forth a particular element of the claim, that reference still may anticipate if the element is "inherent" in its disclosure. To establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." Moreover, the court pointed out that inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.

Applicants note that in accordance with the present invention, a multi-electron beam exposure apparatus is provided which enables reduction of storage circuit capacity and pattern data preparation time while enabling data pattern generation to be achieved on a practical level for commercial use as described at page 7, lines 15 - 20 of the specification. As now recited essentially in both new independent claims 12 and 14 directed to the method and apparatus of the invention, when the sample surface is represented in an X-Y coordinate system and a continuous traveling direction of a sample stage is assumed as a Y-axis direction, the multiple electron beam method and apparatus of the present invention performs exposures

on the sample surface having a plurality of chips of the same kind located in a line at equal intervals in the X and Y direction respectively, as illustrated in the various figures of the drawings.

As recited in the claims and as illustrated in the drawings, the exposure region of a sample surface is partitioned into multiple stripe regions having a width in the X-axis direction with each of these stripe regions being further partitioned into multiple main fields having a width in the Y-axis direction as illustrated in Fig. 5 of the drawings of this application, for example. Furthermore, at least one of the widths of the main fields in the X- and Y-axis directions is set to an integral submultiple of the chip size with the exposure pattern data for one chip being stored based on partitioned main fields as a unit utilizing the apparatus of Fig. 1, for example. The stored exposure pattern data are read out a number of times corresponding to the number of chips repeatedly, and each electron beam provides repeated exposure of the same region of the chips as illustrated in Fig. 5, for example, by the respective electron beams 35a, 35b, etc. With this arrangement, a reduction of exposure pattern data required for exposure on the stripe 43 of the semiconductor wafer 41 consisting of multiple LSI chips 42, as shown in Figs. 6 and 7 of the drawings of this application is obtainable. That is, in accordance with the present invention, it is sufficient if there is a quantity of exposure pattern data which can perform the exposure only for one chip in which all exposure in one stripe can be completed by reading out this exposure pattern data a number of times corresponding to the number of chips in the Y-axis direction, repeatedly. As described at page 6, lines 12 - 14 of the specification, if there are ten LSI chips in one stripe, repeated reading of data ten times is sufficient for this purpose. Consequently, the capacity of the storage circuits 66a-66d in Fig. 1 of the drawings of this application, can be set to be

small and read-out speed can be set to be a low speed. Applicants submit that the features of the present invention are now set forth in independent claims 12 and 14, and the dependent claims thereof.

With respect to Okunuki, such patent discloses a drawing pattern data creation method, capable of increasing the compression efficiency of drawing pattern data, and increasing the speed of the drawing step, even when the periodicity of design pattern data is different form the arrangement periodicity of basic drawing regions defined by a drawing method of an electron beam drawing apparatus as shown in Figure 1 of this patent. Thus, referring to Fig. 5 of Okunuki, a drawing region consists of regions as shown:

(1) The basic drawing regions 155;

(2) The sub-fields 154 which are formed by a plurality of the basic drawing regions 155;

(3) The main fields 152 which are formed by a plurality of the sub-fields 154;

(4) Stripes 153 which are formed by a plurality of main fields 152; and

(5) The wafer 108 has a plurality of stripes 153 formed thereon.

In accordance with Okunuki, the charged particle beam drawing data creation method creates data of (1) the basic drawing region 155. However, in accordance with the present invention, as now recited in claims 12 and 14, an exposure region of the sample surface is partitioned into multiple stripe regions having a width in the X-direction and each of the multiple stripe regions is further partitioned into multiple main fields having a width in the Y-direction with at least one of the widths of the main fields in the X- and Y-axis directions being set to an integral submultiple of the chip size. Applicants submit that Okunuki fails to disclose or teach such recited

features noting that as described with regard to Fig. 6 of the drawings of this application, when the LSI chips 42a and 42b are written and one stripe 143 is partitioned into the main field 44 having a fixed longitudinal width and is written, then μ fields 45a, 45b, ... 45m, 45n, etc. to be written by the same electron beam all require different pattern data and the control circuit of each electron beam is required to store the pattern data for the many μ fields. However, in accordance with the present invention, by partitioning the exposure region in the sample surface into multiple stripe regions having a width in the X-direction and further partitioning each of the multiple stripe regions into multiple main fields having width in the Y-axis direction and setting at least one of the widths of the main fields in the X- and Y-axis directions to an integral submultiple of the chip size, in the exposure of one stripe, the pattern data can be decreased to the stripe exposure data only for one chip. Applicants submit that Okunuki fails to disclose or teach the recited features of independent claims 12 and 14 and therewith the dependent claims in the sense of 35 USC 102, and all claims patentably distinguish thereover.

With respect to Yui et al and Muraki et al, applicants submit that such patents also fail to disclose or teach the recited features as noted above which distinguish over Okunuki as pointed out above and thus, independent claims 12 and 14 and the dependent claims also patentably distinguish over this cited art in the sense of 35 USC 102 and should be considered allowable thereover.

In view of the above amendments and remarks, applicants submit that all claims present in this application should be considered to be in compliance with 35 USC 101, 35 USC 112, and to patentably distinguish over the cited art. Accordingly, issuance of an action of a favorable nature is courteously solicited.

To the extent necessary, applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to the deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (Case: 520.42972X00), and please credit any excess fees to such deposit account.

Respectfully submitted,

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